Lecture Notes: Algebra 2 & Graphing

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| **Main Ideas** | **Details** |
| **Solving Equations with One Variable** | * Keep both sides of the equation balanced  1. Isolate the variable=Keep it on one side of the equation, by itself 2. Perform the opposite operation of the piece of the equation you want to get rid of 3. To check the solution is correct, replace it back in the original equation.  * Example: p+2=7 |
| Equations with Variables on Both Sides | * The process is the same as above, just more steps * Example: 5x+3=3x+7 |
| **Solving Equations with Fractions** | * Multiply the ENTIRE equation by the least common denominator of all the fractions in the equation * This will get rid of fractions * Solve the equation as you would with whole numbers * Example: x/2 + x/3 =5 |
| **Solving Equations with Decimals** | * Handled in a similar way to equations with fractions * Multiply both sides of the equation by a power of ten in order to get rid of any decimals and work with only whole numbers * To determine which power of ten to multiply by, determine how many decimals places are in the rightmost digit. Multiply by the inverse whole number. * Example: 0.1x + 0.01x = 1.21 |
| **Inequalities** | * Solve inequalities the same as if you were solving an equation * Example: x+3 < 7 * HOWEVER!!! THERE IS ONE EXCEPTION! WHEN YOU MULTIPLY OR DIVIDE AN INEQUALITY BY A NEGATIVE NUMBER, REVERSE THE DIRECTION OF THE INEQUALITY SIGN * Example: -2x < 14 |

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| **Systems of Linear Equations** | * Also called “Simultaneous equations” * Two or more equations happening at the same time * The number of equations is the number of variables to solve for * Ex: x+y=5 * x-y=1 |
| Elimination Method | * One method used to solve simultaneous equations * 1. Add the two equations to eliminate one of the variables. (Sometimes you must first multiply one equation by another number to get it ready for this method.) * 2. Substitute the solution for one variable in the original equations and solve for the other variable. * Ex: x+y=5 * x-y=1 * Ex: 5x+3y=12 * -2x+3y=-3 |
| **Substitution Method** | * Another method used to solve simultaneous equations * 1. Solve one equation for one variable. * 2. Substitute that expression into the other equation and solve for the remaining variable. * 3. Substitute the solution into one of the original equations to find the second variable. * Ex: y=2x * 3x+3y=21 |